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IS 10664 (2003): Dental Rotary Instruments - Steel and Carbide Finishing Burs [MHD 8: Dentistry]

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(पहला पुनरीक्षण)

Indian Standard

DENTAL ROTARY INSTRUMENTS — STEEL AND CARBIDE FINISHING BURS

(First Revision)

ICS 11.060.20

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 2003

Price Group 7

Dentistry Sectional Committee, MHD 8

NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 3823-2:1986 'Dental rotary instruments — Part 2 : Steel and carbide finishing burs' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Dentistry Sectional Committee and approval of the Medical Equipment and Hospital Planning Division Council.

This standard was first published in 1983. Its first revision has been undertaken with a view to align its requirements with ISO 3823-2:1986 and adopt it as a dual number standard.

The text of standard has been approved as suitable for publication as Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their places are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 1797-1:1992	IS 15311 (Part 1) : 2003 Dental rotary instruments-Shanks : Part 1 Shanks made of metals (*under print*)	Identical
ISO 2157:1992	IS 10307 : 1983 Dental instruments — Working parts of burs and cutters, dental — Nominal sizes and designations (*first revision*)	do
ISO 8325:1985	IS 13701 : 1993 Dentistry — Dental rotary instruments — Test methods	do

The Technical Committee responsible for the preparation of this standard has reviewed the provisions of ISO 6360-1 and ISO 6360-2, referred in this adopted standard and has decided that these are acceptable for use in conjunction with this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2:1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard
DENTAL ROTARY INSTRUMENTS — STEEL AND CARBIDE FINISHING BURS
(First Revision)

0 Introduction

This International Standard is one of a series of standards relating to dental rotary instruments. It consists of two parts :

Part 1 : Steel and carbide burs.

Part 2 : Steel and carbide finishing burs.

The various dimensional and other requirements specified for steel and carbide finishing burs are those considered important to ensure the interchangeability of these instruments.

Attention is drawn to ISO 6360 which specifies a 15-digit number for the identification of dental rotary instruments of all types.

1 Scope and field of application

This part of ISO 3823 specifies dimensions of, and requirements for, the twelve most commonly used forms of steel and carbide finishing burs. It is envisaged to extend the scope of this International Standard to cover other forms of burs.

Other characteristics of bur heads, for example spiralled blades, cross-cut, are not covered by this International Standard. These will be dealt with in a future International Standard.

2 References

ISO 1797, *Dental rotary instruments — Shanks.*

ISO 2157, *Dental rotary instruments — Nominal sizes and designation.*

ISO 6360, *Dental rotary instruments — Number coding system.*

ISO 8325, *Dental rotary instruments — Test methods.*

3 Classification

Dental finishing burs shall be classified, according to the material of the working part, into the following two types :

- **Type 1** : Steel finishing burs
- **Type 2** : Carbide finishing burs

4 Symbols

d_1 diameter of the working part, head diameter

d_2 neck diameter

l_1 length of the working part, head length

l_2 overall length

5 Material

The shaft shall be made of steel or other suitable material. The working parts of steel finishing burs shall be made of steel and those of carbide finishing burs of tungsten carbide.

The selection of the type of material and the treatment shall be left to the discretion of the manufacturer.

6 Dimensions and number of blades

All dimensions are in millimetres.

The dimensions, determined as described in ISO 8325, shall be as specified in the tables and shown in figures 1 to 12.

For the overall length, see clause 7.

Shank types 1, 2 or 3 shall be in accordance with ISO 1797.

A dash in a column of a table indicates that the particular size is not available.

6.1 Round head

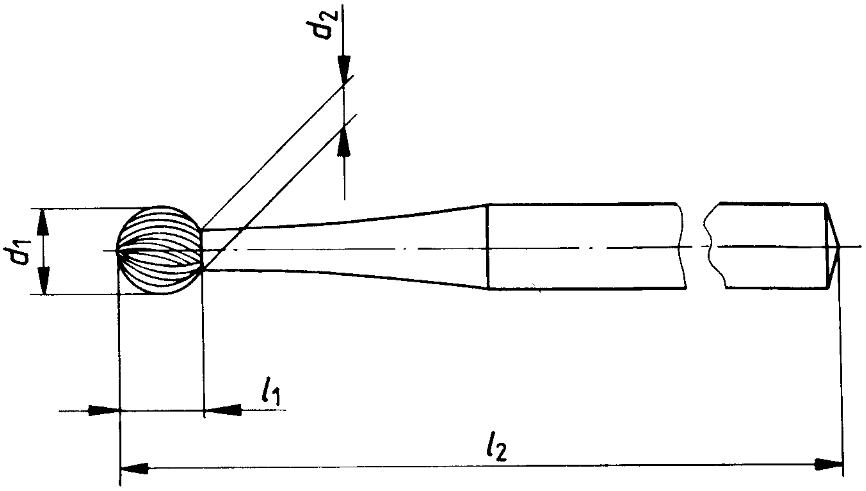


Figure 1

Table 1 — Dimensions and number of blades

Nominal size	d_1	l_1 min.		d_2	Number of blades min.	
		Type 1	Type 2	max.	Type 1	Type 2
008	0,8 ± 0,08	0,58	—	0,64	10	—
010	1,0 ± 0,08	0,73	0,65	0,78	12	12
012	1,2 ± 0,08	0,90	0,79	0,88	14	12
014	1,4 ± 0,10	1,08	0,82	0,98	16	12
016	1,6 ± 0,10	1,26	—	1,04	16	—
018	1,8 ± 0,10	1,46	1,26	1,12	16	12
021	2,1 ± 0,10	1,71	—	1,20	20	—
023	2,3 ± 0,10	1,89	1,60	1,29	20	12
025	2,5 ± 0,10	2,05	—	1,40	20	—
027	2,7 ± 0,10	2,23	1,95	1,48	22	12
029	2,9 ± 0,10	2,39	—	1,60	22	—
031	3,1 ± 0,10	2,53	2,44	1,68	24	22
033	3,3 ± 0,10	2,72	—	1,78	26	—
035	3,5 ± 0,10	2,92	—	1,82	28	—
037	3,7 ± 0,10	3,09	—	1,92	30	—
040	4,0 ± 0,10	3,40	—	2,06	32	—
042	4,2 ± 0,10	3,51	—	2,16	32	—
045	4,5 ± 0,10	3,80	—	2,16	32	—
047	4,7 ± 0,10	3,97	—	2,24	36	—
050	5,0 ± 0,10	4,25	—	2,32	36	—

6.2 Bud

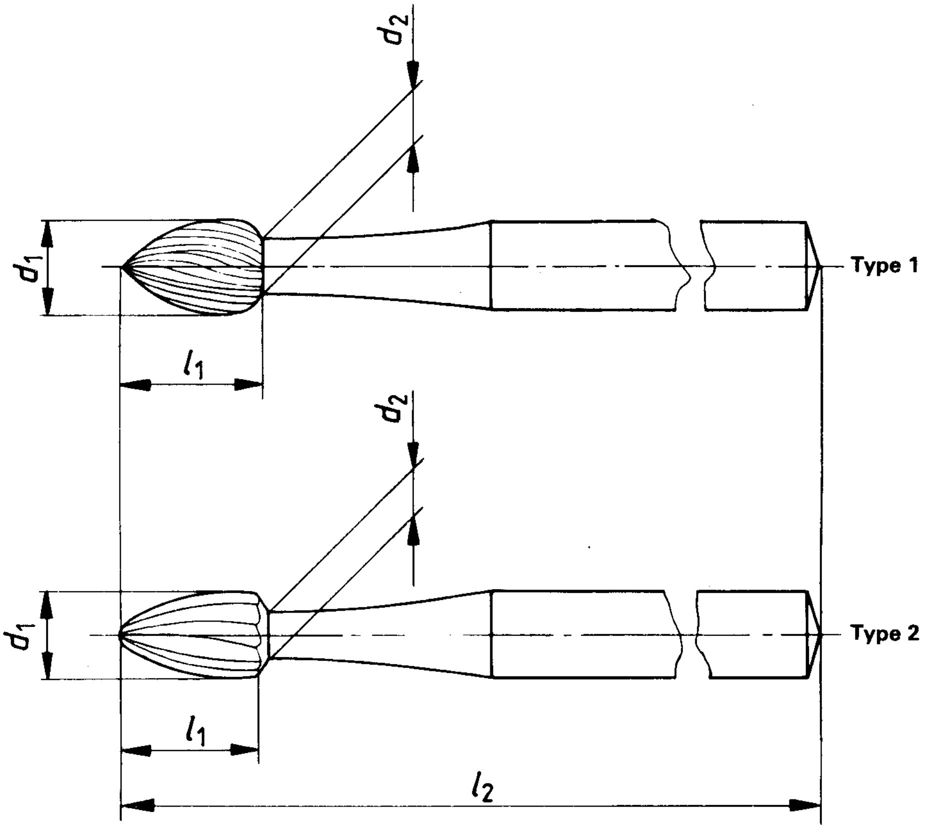
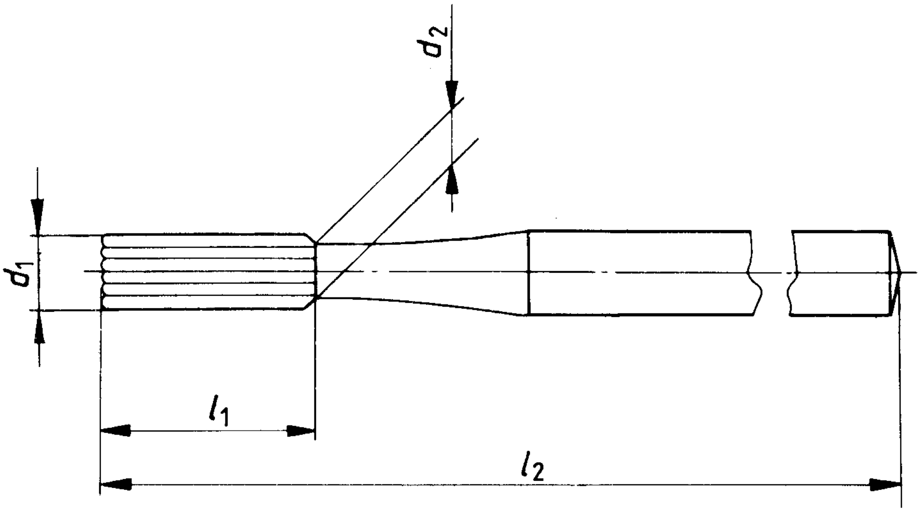


Figure 2

Table 2 — Dimensions and number of blades

Nominal size	d_1	l_1 min.		d_2	Number of blades min.	
	± 0,08	Type 1	Type 2	max.	Type 1	Type 2
010	1,0	1,10	—	0,78	12	—
012	1,2	1,40	—	0,88	14	—
014	1,4	1,70	3,0	0,98	14	10
016	1,6	2,00	—	1,04	16	—
018	1,8	2,35	3,3	1,12	16	10
021	2,1	2,75	—	1,20	20	—
023	2,3	3,05	3,9	1,29	20	10

6.3 Cylindrical



Taper angle of the head < 2°

Figure 3

Table 3 — Dimensions and number of blades

Nominal size	d_1	l_1 min.		d_2	Number of blades min.	
	± 0,08	Type 1	Type 2	max.	Type 1	Type 2
008	0,8	3,3	–	0,88	10	–
010	1,0	3,8	3,7	1,08	12	10
012	1,2	3,8	3,7	1,28	14	10
014	1,4	4,3	4,1	1,35	14	10
016	1,6	4,3	–	1,50	16	–
018	1,8	4,8	–	1,60	16	–
021	2,1	4,8	–	1,70	20	–
023	2,3	5,3	5,0	1,80	20	18

6.4 Flame

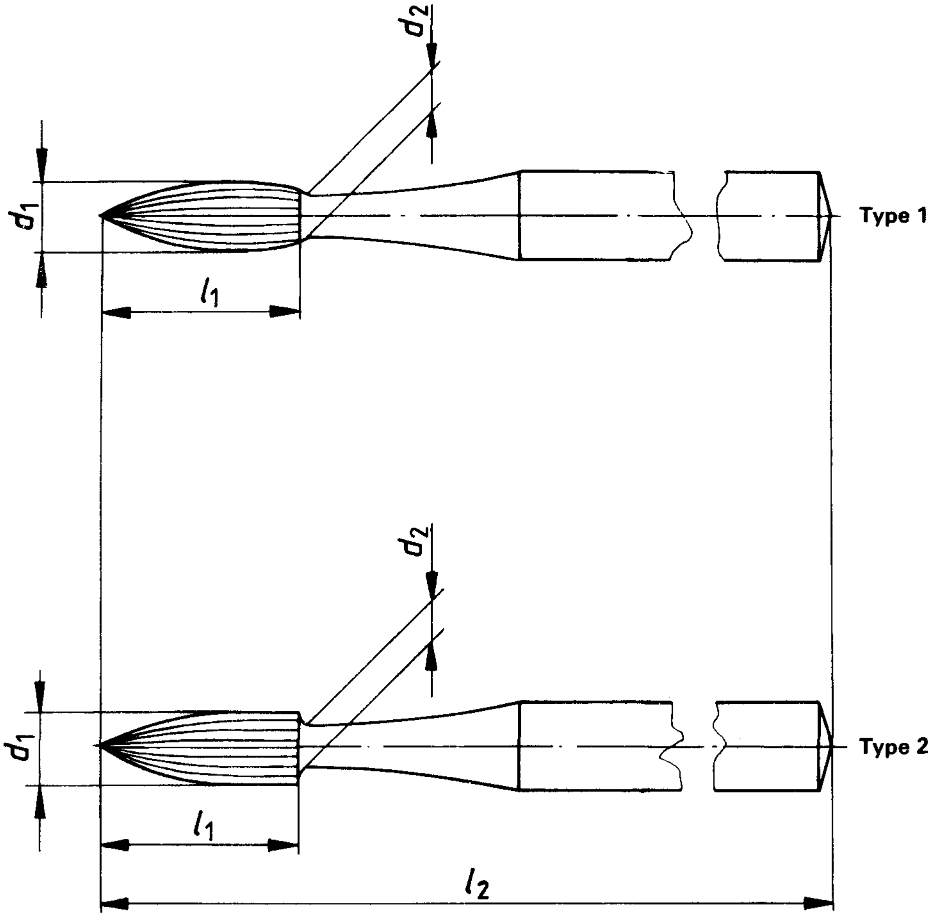
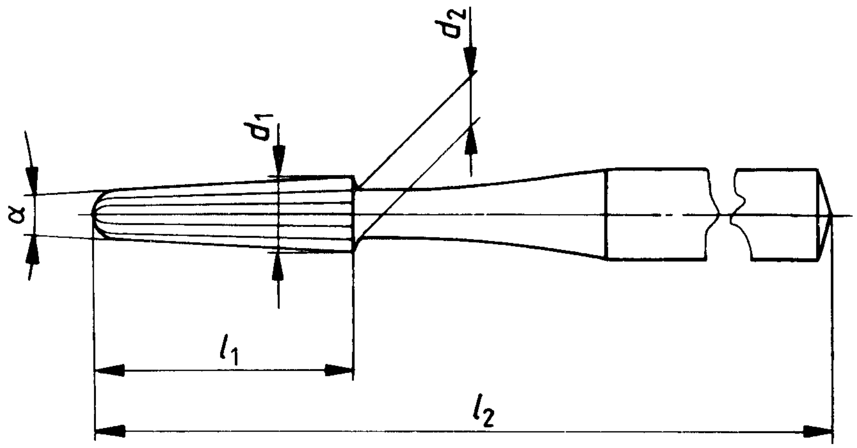


Figure 4

Table 4 — Dimensions and number of blades

Nominal size	d_1	l_1 min.		d_2	Number of blades min.	
	± 0,08	Type 1	Type 2	max.	Type 1	Type 2
010	1,00	3,8	3,2	0,86	12	10
012	1,20	3,8	3,7	0,96	14	10
014	1,40	4,3	3,7	1,00	14	14
016	1,60	4,3	4,1	1,05	16	16
018	1,80	4,8	—	1,15	16	—
021	2,10	4,8	—	1,20	20	—
023	2,30	5,3	—	1,30	20	—

6.5 Tapered, rounded end, regular



α = 4° to 8°

Figure 5

Table 5 — Dimensions and number of blades

Nominal size	d_1 ± 0,08	l_1 min. Type 2	d_2 max.	**Number of blades** min.
010	1,00	3,7	0,86	10

6.6 Egg

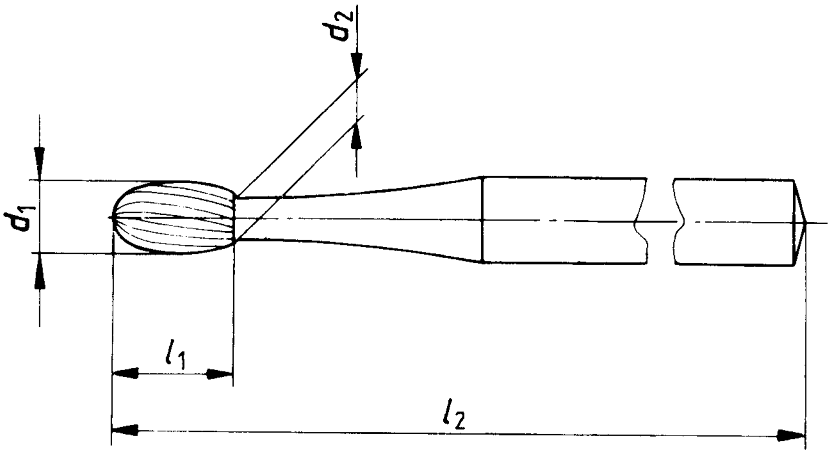
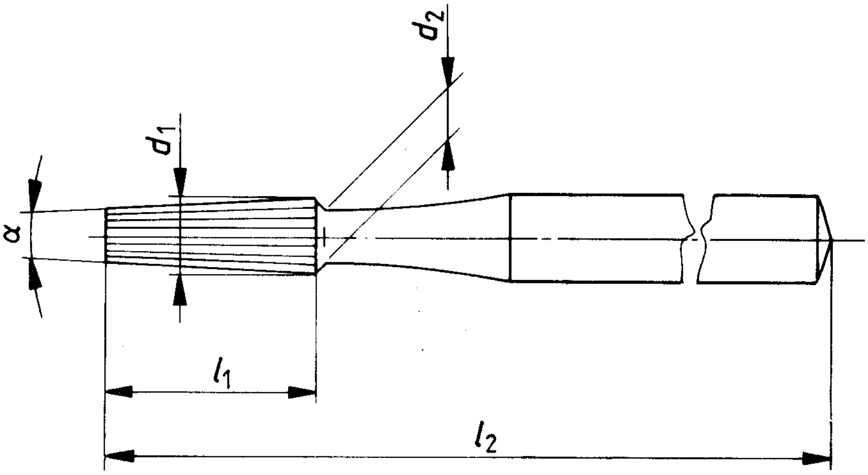


Figure 6

Table 6 — Dimensions and number of blades

Nominal size	d_1	l_1 min.		d_2	Number of blades min.	
	± 0,08	Type 1	Type 2	max.	Type 1	Type 2
014	1,4	2,2	2,6	1,10	16	10
018	1,8	2,8	3,0	1,35	16	10
023	2,3	—	3,3	1,45	—	10
027	2,7	3,7	—	—	22	—
031	3,1	3,7	—	—	24	—

6.7 Tapered, regular



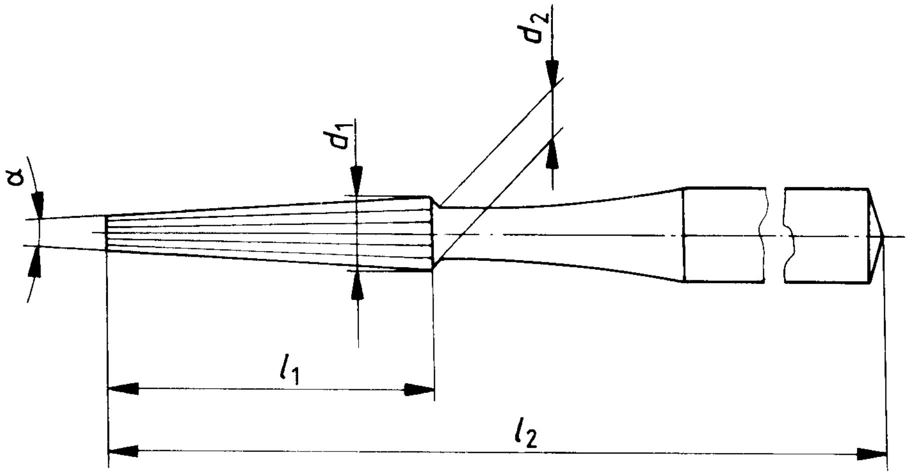
α = 4° to 8°

Figure 7

Table 7 — Dimensions and number of blades

Nominal size	d_1	l_1 min.		d_2	Number of blades min.	
	± 0,08	Type 1	Type 2	max.	Type 1	Type 2
010	1,0	3,0	2,9	1,08	8	10
012	1,2	3,0	2,9	1,28	10	10
014	1,4	3,5	—	1,35	10	—
016	1,6	3,5	3,3	1,50	12	10
018	1,8	3,5	—	1,60	12	—
021	2,1	4,0	—	1,70	14	—
023	2,3	4,0	—	1,80	14	—

6.8 Tapered, head length over 8,5 mm



α = 4° to 8°

Figure 8

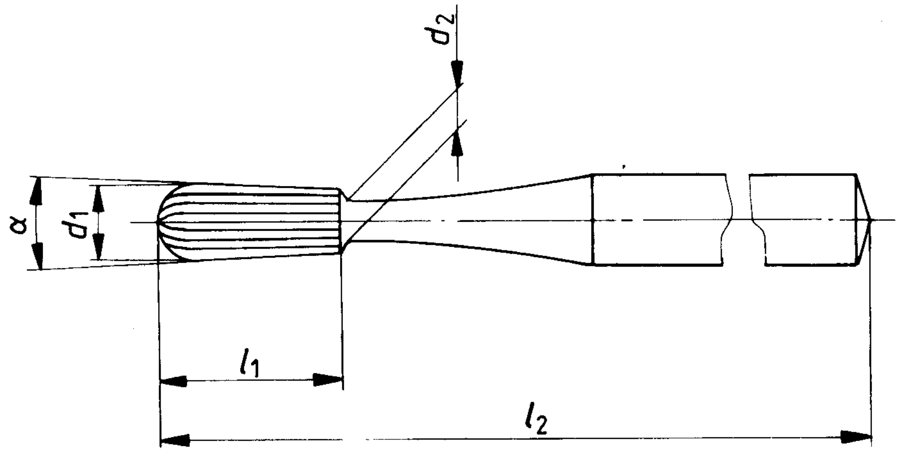
Table 8 — Dimensions and number of blades

Nominal size	d_1 ± 0,08	l_1 min. Type 2	d_2 max.	Number of blades min.
014	1,4	8,5	1,35	10
016	1,6	8,5	1,50	10
018	1,8	8,5	1,60	10

Table 9 — Overall lengths, l_2

Length of instrument	Overall length, l_2, for instruments with shanks		
	Shank type 1 ± 0,5	**Shank type 2**	**Shank type 3** ± 0,5
Short	23,5	—	21,5
Standard	27,0	46,0 ± 0,5	24,0
Long	31,0	64,5 ± 1	26,0
Extra long	39,0	70,0 ± 1	30,0

6.9 Pear, long



α = 2° to 6°

Figure 9

Table 10 — Dimensions and number of blades

Nominal size	d_1 ± 0,08	l_1 min. Type 2	d_2 max.	Number of blades min.
012	1,2	3,7	0,96	10
014	1,4	4,1	0,98	10
016	1,6	4,1	1,04	10

6.10 Interproximal

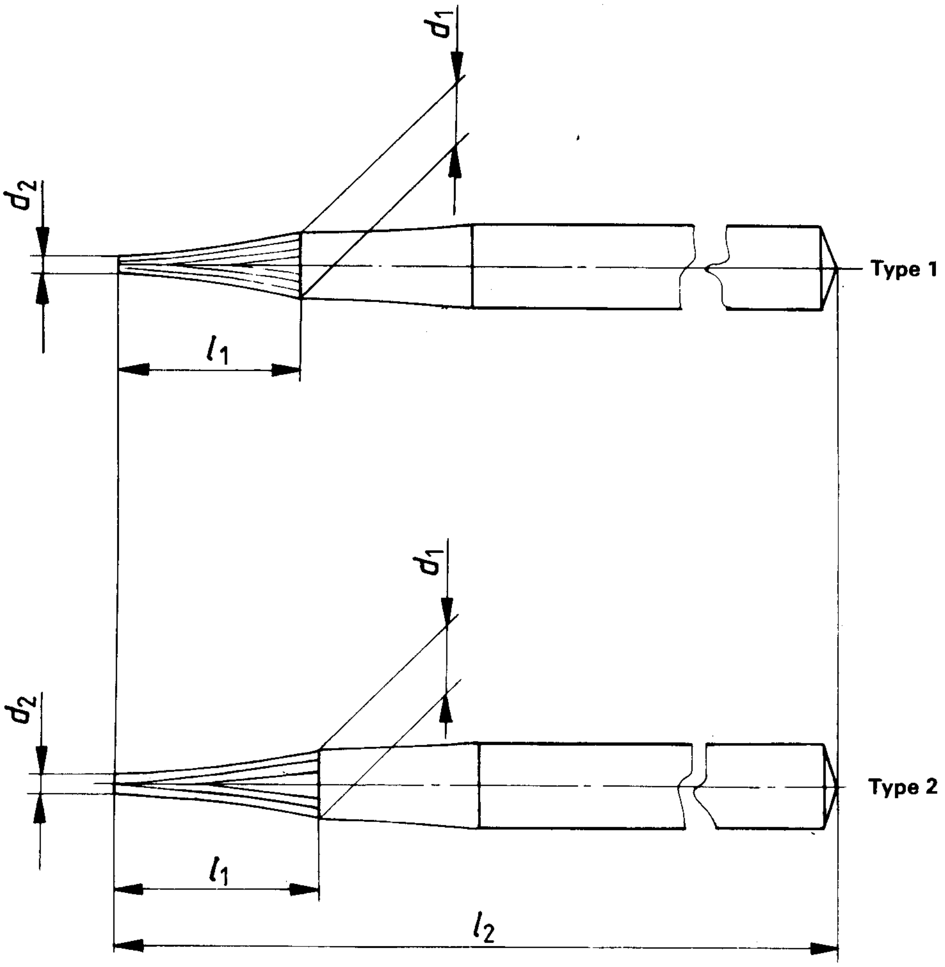
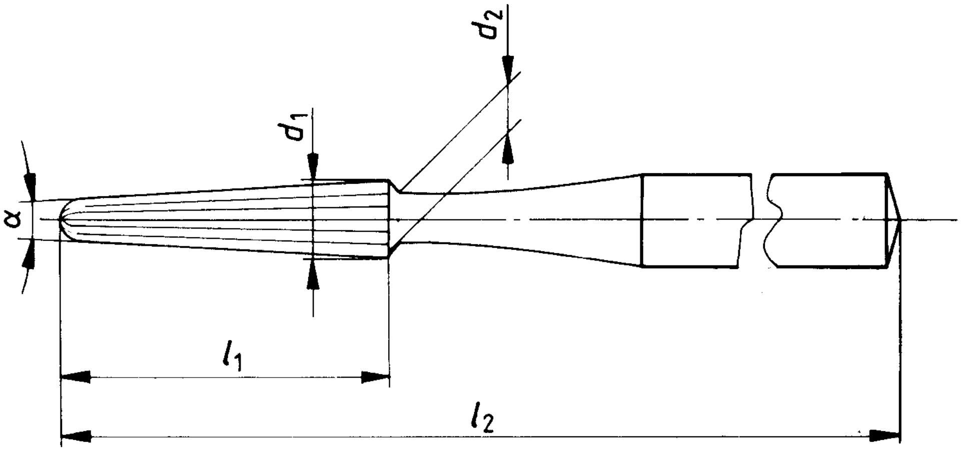


Figure 10

Table 11 — Dimensions and number of blades

Nominal size	d_1	l_1 min.		d_2	Number of blades min.	
	± 0,08	Type 1	Type 2	max.	Type 1	Type 2
010	1,0	—	4,5	0,5	—	10
016	1,5	5,5	—	0,5	14	—
018	1,8	5,5	5,0	0,5	16	10
023	2,3	5,5	—	0,5	18	—

6.11 Tapered, rounded end (head-length over 8,25 mm)



α = 4° to 8°

Figure 11

Table 12 — Dimensions and number of blades

Nominal size	d_1 ± 0,08	l_1 min. Type 2	d_2 max.	Number of blades min.
014	1,5	8,25	1,35	10
021	2,0	8,25	1,70	10

Table 13 — Overall lengths, l_2

Length of instrument	Overall length, l_2, for instruments with shanks		
	Shank type 1 ± 0,5	Shank type 2	Shank type 3 ± 0,5
Short	22,5	—	20,5
Standard	26,0	46,0 ± 0,5	23,0
Long	30,0	64,5 ± 1	25,0
Extra long	34,0	70,0 ± 1	29,0

6.12 Bullet shape

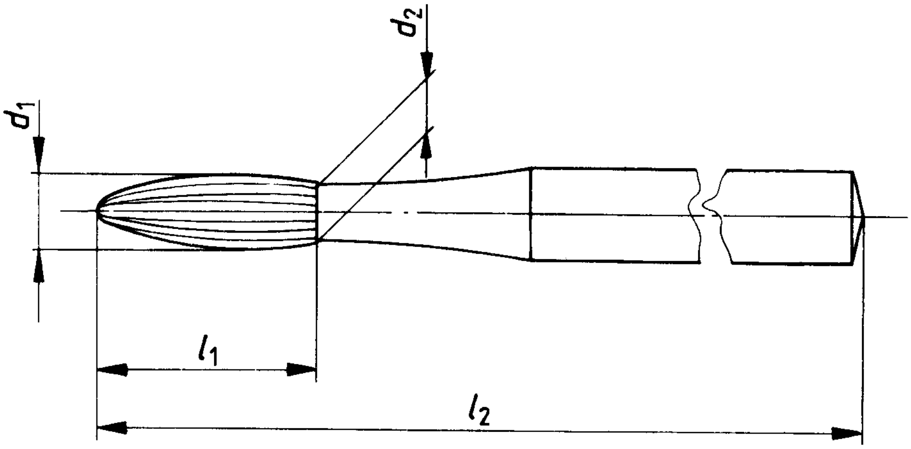


Figure 12

Table 14 — Dimensions and number of blades

Nominal size	d_1 ± 0,08	l_1 min. Type 2	d_2 max.	Number of blades min.
010	1,0	2,6	0,86	10
012	1,2	2,8	0,96	10

7 Overall length

The overall length, l_2, determined as described in ISO 8325, shall be as specified in table 15 depending on the type of handpiece for which the instrument is intended. Shank types 1, 2 and 3 given in table 15 are those of ISO 1797.

Detailed specifications are given for exceptionally long instruments "tapered, head length over 8,5 mm" and "tapered, rounded end (head length over 8,25 mm)" in 6.8 and 6.11 respectively.

8 Run-out

The total indicated run-out, determined as described in ISO 8325, shall not exceed the following values :

- for Type 1 : 0,08 mm
- for Type 2 : 0,05 mm

The measurement point diameter, d_2, is situated just behind the working part, except in the case of the burs shown in 6.8 and 6.11 where the measurement point is 2 mm from the tip end.

9 Neck strength

The bur, when tested in accordance with ISO 8325, shall not fracture or take a permanent set in excess of the following values :

- for Type 1 : 0,08 mm
- for Type 2 : 0,05 mm

10 Quality control

10.1 Sampling

Use a sample size of between 100 and 150 burs of each type, containing at least 20 burs of each of a minimum of five different bur sizes. At least two types of shanks shall be included for type 1 burs and at least three classes for type 2 burs.

Check 20 burs for each possible defect. The sample group is considered acceptable if no more than three of the 20 burs are rejected. If four or more burs fail the requirements for any given possible defect, the batch from which the samples were drawn may be rejected.

10.2 Acceptable quality level (AQL)

The acceptable quality level for each type of bur, expressed as the maximum acceptable number of defects per 100 pieces, shall be 6,5 max.

The defects are as follows :

a) the total indicated run-out exceeds the values specified;

b) the head diameter does not conform to that specified;

c) the neck diameter exceeds the maximum value specified;

d) any combination of neck breakage, joint breakage or where the neck takes a permanent set at loads less than those specified;

e) the head length is below the minimum value specified;

f) the overall length does not conform to that specified.

Table 15 — Overall lengths, l_2

Length of instrument	Overall length, l_2, for instruments with shanks		
	Shank type 1 ± 0,5	Shank type 2	Shank type 3 ± 0,5
Short	18,5	—	16,5
Standard	22,0	44,5 ± 0,5	19,0
Long	26,0	64,5 ± 1	21,0
Extra long	34,0	70,0 ± 1	25,0

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402

Telegrams: Manaksanstha
(Common to all offices)

Regional Offices:

		Telephone
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	2323 7617 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	2337 8499, 2337 8561 2337 8626, 2337 9120
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